REMARKS

By this Amendment, claims 24, 33, 38-39, 41, 43, 46-47 and 50-51 were amended to merely clarify the recited subject matter. Claims 1-4, 6-10, 17-19, 21-28, 30-35 and 38-51 are pending.

Claims 24, 33, 43 and 47 were rejected under 35 U.S.C. 112, second paragraph, for alleged indefiniteness. Applicant has amended those claims to overcome the rejection. Specifically, Applicant has amended claim 47 to clarify the recited subject matter in accordance with the teachings of the specification at page 6, lines 14-22; moreover Applicant has also amended claim 41 similarly for consistency and correctness.

Claims 24, 33 and 43 have also been amended to refer to a "non-standardized" input/output interface rather than a "non-standard" input/output interface. Further, Applicant directs the Office's attention to Applicant's specification at page 2, lines 11-29, which teaches that, in conjunction with operating environments such a Microsoft Windows™ running in conjunction with MS-DOS operating systems provide for standardized connections to serial devices coupled to an ISA bus. One of ordinary skill in the art would recognize that this is what is meant by the term "standardized;" as a result, one of ordinary skill in the art would also recognize the meaning of the claim term "non-standardized." Thus, Applicant submits that the amended claim language, when read in light of at least this passage of the specification, would clearly indicate to one of ordinary skill in the art what is covered by the claim. Accordingly, Applicant requests withdrawal of the 112 rejection.

Claims 46-49 were rejected under 35 U.S.C. 102(e) as being anticipated by Bailey et al. (U.S. 5,644,593; hereafter "Bailey"). Claims 1-2, 4, 6-9, 17-19, 21-28, 30-33, 35, 38-45 and 50-51 were rejected under 35 U.S.C. 103(a) as being unpatentable over Suffern et al. (U.S. 5,646,983; hereafter "Suffern") and Bailey. Claims 3, 10 and 34 were rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Suffern, Bailey and Gibson et al. (U.S. 5,640,594; hereafter "Gibson"). Applicant traverses the prior art rejections because the cited prior art references, analyzed individually or in combination, fail to disclose, teach or suggest all the features recited in combination in the rejected claims.

For example, the cited prior art references fail to disclose, teach or suggest the claimed structure for UART emulation . . .

The Office Action referred to various passages as teaching the claimed UART emulation . . , e.g., col. 3, lines 11-15, col. 5, lines 29-31 and lines 43-47, col. 13, lines 5-10 and col. 16, lines 24-36. However, Applicant submits that the Office Action has

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mischaracterized the teachings of Bailey. Specifically, Bailey merely teaches on the subject of conventional operation and shortcomings of a DTE that has a <u>serial</u> input-output port including a Universal Asynchronous Receiver Transmitter (UART) which sends and receives serial data to and from a modem. As explained by Bailey, the conventional UART provides the hardware interface between the serial port connector and the computer's control processing unit (CPU). When it receives data, it assembles the bits of data into bytes of data and notifies the CPU that a byte of serial data has been received.

Bailey explains that, with DTE data rates approaching 115,200 bps, many personal computers have trouble keeping up because the interrupt driven communication port device drivers and applications have to service an interrupt for each character received. In addition, the interrupt latency on the receive side can cause a loss of data due to overruns. However, with the serial communications ports in most of today's personal computers interrupt driven, today's multitasking operating systems cannot service the serial communication interrupts fast enough to keep up with today's high speed modems to avoid losing data. Consequently, the communication link between the modem and the personal computer under these operating systems is limited to about 9,600 to 38,400 bps (depending upon CPU speed and other operating environment characteristics). Since 28,800 bps modems using data compression can effectively communicate at 115,200 bps, this is the limiting factor in utilization of the full bandwidth of these devices.

As a result, Bailey discloses that one solution to this problem has been the development of an improved UART with a buffer that holds up to 16 bytes of data, which, according to Bailey, enables the UART to receive and hold up to 16 bytes of data before it begins losing data to overrun errors. However, Bailey also teaches that that solution is deficient because there is no guarantee that data will not be lost. Thus, Bailey teaches an alternative solution to that specific problem that does not relate to Applicant's invention; specifically, Bailey teaches a high performance interface which transmits data in a <u>non-serial</u>, i.e., <u>parallel</u> manner between a DTE and DCE. Bailey states "[i]n the case of the parallel interface, it initializes the parallel printer port of the DTE, redirects the data such that the operating system and/or the application software running on the computer recognizes that the communications port is available and, if necessary, fools the DTE into thinking that the communications port is a serial port." (col. 5, lines 42-47).

Suffern fails to remedy the deficiencies of Bailey because Suffern merely teaches a DOS-based modem directed to 3270 terminal mode operation at 2400 baud or less, as

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described at col. 18, lines 54-56, together with certain fax features. Accordingly, the combined teachings of Bailey and Suffern fail to disclose, teach or suggest the claimed invention.

Further, Gibson fails to remedy the deficiencies of Bailey and Suffern because Gibson merely teaches generally on the subject of interfaces between DCEs and DTEs, and more particularly to a high performance modem for connection with a computerized system through a parallel communications interface. Accordingly, the combined teachings of Bailey and Suffern fail to disclose, teach or suggest the claimed invention.

Therefore, the cited prior art fails to disclose teach or suggest the claimed structure for UART emulation, e.g.:

- system comprising "a communications driver executed by the processing unit, the communications driver comprising a UART emulation which in response to an access targeted at a register set of a UART corresponding to the first communication port, converts the access as required for the register set and address assignment of the device," as recited in independent claim 1 and its dependent claims 2-3;

- method for communicating between a computer and a device having an I/O interface which differs from the I/O interface of a UART, comprising "allocating in a memory of the computer, storage locations which correspond to registers of a UART; transmitting a packet formatted for a UART via a communications driver including a UART emulation; updating a value in the storage locations according to a value in the packet via the UART emulation; and transmitting the packet via the local bus between the I/O interface of the device and the allocated storage locations in the memory of the computer," as recited in independent claim 4 and its dependent claims 6-10;

- host signal processing modem comprising "a communications driver executable by the host computer, the communication driver comprising a UART emulation, wherein in response to the host computer executing a procedure that targets an access at a register set of a UART, the UART emulation converts the access as required for accessing the register set and address assignment of the device," as recited in independent claim 17 and its dependent claims 18 and 23;

- communication driver comprising "a UART emulation that in response to a procedure requesting access to a register of a UART at a first port, instead accesses storage locations in a memory of the host computer; and an I/O handler that transfers values between the storage locations and a register set of a non-standard device having an address assignment that differs from that of a UART, wherein the register set of the non-standard device physically occupies addresses corresponding to the first port," as recited in independent claim 19 and its dependent claims 21-22.

- communication driver executable by a host computer running under an operating system, the communication driver comprising "a software modem

operable to allow a device with a <u>non-standardized input/output interface to</u> <u>transparently communicate through the operating system with an application</u> <u>executing on the host computer,</u>" as recited in independent claim 24 and its dependent claims 25-28.

- system comprising "a processing unit coupled to the device, to receive therefrom a plurality of sampled digital values, the processing unit being programmed with a software modem to determine data received, based on a waveform represented by the sample digital values, wherein the processing unit is programmed with an operating system for supporting a plurality of applications, <u>at least one of the applications communicating with the software</u> <u>modem in the same manner as with a hardware modem,</u>" as recited in independent claim 30 and its dependent claims 31-32;

- method comprising "determining data received based on a waveform represented by the sampled digital values, and based on a modem protocol, wherein said determining is performed in a processing unit coupled to the analog to digital converter by a local bus of a computer, the processing unit running under an operating system, the sampled digital values being transferred from the analog to digital converter to the processing unit by the local bus; <u>and providing the received data through the operating system to an</u> <u>application executing on the processing unit, thereby allowing the device with</u> <u>the non-standardized input/output interface to transparently communicate with</u> <u>the application,</u>" as recited in independent claim 33 and its dependent claims 34-35;

- computer comprising a processing unit and memory programmed with a first driver, said "first driver comprising (a) a software UART coupled to an operating system, (b) a software modem coupled to the software UART, and (c) an I/O handler coupled to the software modem; and <u>a first device coupled</u> <u>to the processing unit by a local bus, wherein the first device comprises an</u> <u>analog to digital converter that generates sample digital values, and the first</u> <u>device transfers the sampled digital values via the local bus to the software</u> <u>modem,</u>" as recited in independent claim 38 and its dependent claims 39-42;

- computer comprising "a processor coupled to the local bus, the processor running under an operating system and programmed to: determine data received based on a waveform represented by the sampled digital values and based on a modem protocol; and <u>provide the received data through the</u> <u>operating system of the computer to an application executing on the processor,</u> <u>thereby allowing the device with the non-standardized input/output interface</u> <u>to transparently communicate with the application,</u>" as recited in independent claim 43 and its dependent claims.

- protocol translation apparatus comprising a translation means in communication with the first device and the second device, wherein <u>the</u> <u>translation means designates portions of the memory to correspond to an</u> <u>output portion of the serial input/output interface and another portion of the</u> <u>memory to correspond to an input portion of the serial input/output interface,</u> <u>such that communication between the first and second device is routed</u> <u>through the memory by the translation means,</u>" as recited in independent claim 46 and its dependent claims 47-49; and
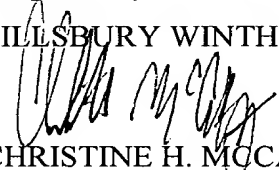
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- system comprising "a communications driver executed by the processing unit, the communications driver comprising an emulation of at least a portion of a UART <u>which in response to an access targeted at a register set of a UART corresponding to the first communication port, converts the access as required for the register set and address assignment of the device</u>," as recited in independent claim 50 and its dependent claim 51.

Accordingly, Applicant submits that all pending claims are patentable over the prior art and requests that a Notice to that effect be issued immediately. However, if anything further is necessary to place the application in condition for allowance, Applicant requests that the Examiner telephone the undersigned Applicant representative.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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